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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/626,698

07/25/2003

Hong-Long Chou

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08/04/2006

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EXAMINER

CASCHERA, ANTONIO A

ART UNIT

PAPER NUMBER

2628

DATE MAILED: 08/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/626,698

Applicant(s)

CHOU ET AL.

Examiner

Antonio A. Caschera

Art Unit

2628

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. Receipt is acknowledged of a request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e) and a submission, filed on 05/18/06.

Priority

2. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in the pending application.

Claim Objections

3. Claims 9, 13, 17 and 18 are objected to because of the following informalities:
 - a. Claims 9 and 13 comprise the variable U_x however such variable should be replaced with U_s to comply with the equation of claims 9 and 13 (see last 4 lines of the claims).
 - b. Claims 13 and 18 comprise the function $T_x(x_p, y_i)$ however such function should be replaced with $T_s(x_p, y_i)$ to comply with the equation of claims 13 and 18 (see last 4 lines of the claims).
 - c. Claims 17 and 18 comprise the phrase, "...the intensities of the rest pixels inside the..." (see line 6 of claim 17 and line 1 of claim 18) which is not comprehensive.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In reference to claims 1 and 9, Applicant claims, “A...method for mapping multiple images onto a 3D model....” (see lines 1-2 of claims 1 and 9) however the claims follow by reciting “providing an image....” and “converting the image...” (see line 3 of each claim). These limitations are seen as contradicting to the preamble and therefore renders the claims indefinite since the claims do not clearly and particularly point out the invention at hand.

Further, in reference to claims 1 and 9, the Office finds it difficult to comprehend how the 3D model of the recited claims is “output.” The claims solely recite, “...and outputting the 3D model,” (see the last line of claim 1, for example) however it is unclear as to what exactly the “outputting” entails. The Office asks, is the 3D model displayed to the user? Is the 3D model stored in memory? Since the Office sees this term, “outputting” as vague and unclear, the claims are therefore rendered indefinite.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are

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such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kichury (U.S. Patent 6,057,850) in view of Teo (U.S. Patent 6,385,349).

In reference to claim 1, Kichury discloses a multilevel texture processing method for mapping multiple images onto a 3D model with a texture mapping (col. 2: 44-49), the method comprising the steps of:

- providing an image to the 3D model (col. 1: 40-54; col. 4: 33-35,30-33; col. 6: 64-65);
- converting the image and the texture mapping to a same spatial coordinate system and dividing them into a plurality of polygons (col. 1: 48-54; col. 4: 30-34; col. 7: 48-54; col. 7: 61 through col. 8: 14 and #408-414 of Figure 4, especially #411-414, whereby for each polygon vertex, the texture image is mapped/transformed to. This is seen as functionally equivalent to Applicant's dividing into polygon);
- extracting overlapped polygons from the image with the texture mapping within the spatial coordinate system (col. 5: 11-15 and col. 6: 13-26. Note, since the images are "bump-mapped" images representative of the surface of the 3D model, the Office interprets that the 3D model polygons are therefore inherently "extracted" from the images);
- using a prescribed condition to select the texture of one of the image and the texture mapping as the texture of the polygon (col. 5:34-56, col. 6:12-31 and col. 7: 61-63. Kichury discloses utilizing polygon orientation or depth tests of image polygons).

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- smoothing the texture of the polygon (col. 6: 32-47);
- making the pixels inside the polygon continuous (col. 7: 55-60; col. 8: 15-24); and
- restoring the polygon and outputting the 3D model (col. 4: 19-29 and col. 8: 34-41).

While Kichury discloses the method of multilevel texture processing method for mapping multiple images onto a 3D model with a texture mapping including comparing the image with the texture mapping within the spatial coordinate system and extracting overlapped polygons, Kichury does not specifically disclose wherein using the pixel intensity of the overlapped polygons to compute a statistics mean for adjusting the pixel intensity of the image accordingly. Teo discloses a system and method for merging a plurality of images which overlap wherein using the pixel intensity of the overlapped polygons to compute a statistics mean for adjusting the pixel intensity of the image accordingly (Figure 7C; column 10, lines 21-46; column 15, lines 44-56). It would have been obvious to one of ordinary skill in the art at the time the invention was made to integrate the teachings of Kichury and Teo to achieve a system and method in which multiple images are merged by properly aligning the images so that artifacts do not occur in view of different image lighting conditions and color characteristics (see column 8, lines 20-39 of Teo).

In reference to claim 2, Kichury and Teo disclose all of the claim limitations as applied to claim 1 above. In addition, Kichury discloses wherein the prescribed condition is selected from the group consisting of resolution, polygon orientation, and camera viewing perspective (col. 5:34-56, col. 6:12-31 and col. 7: 61-63. Kichury discloses utilizing polygon orientation or depth tests of image polygons).

In reference to claim 3, Kichury and Teo disclose all of the claim limitations as applied to claim 1 above. In addition, Kichury discloses wherein the step of smoothing the texture of the polygon includes texture normalization and texture blurring (col. 5: 24-33).

In reference to claim 4, Kichury and Teo disclose all of the claim limitations as applied to claim 3 above. In addition, Kichury discloses wherein the texture normalization uses the pixel intensities of the polygons in both the image and the texture mapping to compute a weighted average for adjustment (col. 5: 24-65. The equation (2) notes using image pixels and mappings via the light and direction vectors when texture normalizing).

In reference to claim 5, Kichury and Teo disclose all of the claim limitations as applied to claim 3 above. In addition, Kichury discloses wherein the texture blurring uses the textures of the polygon and its neighboring polygons to compute a weighted average for adjustment (col. 5: 24-28, 56-65; col. 6: 12-65).

In reference to claim 6, Kichury and Teo disclose all of the claim limitations as applied to claim 1 above. In addition, Kichury discloses wherein the step of making the pixels of the polygon texture continuous is achieved by mixing colors with the neighboring polygons (col. 6: 32-47).

In reference to claim 7, Kichury and Teo disclose all of the claim limitations as applied to claim 6 above. In addition, Kichury discloses wherein the step of mixing colors includes the steps of extracting a pixel on the border of the polygon with discontinuous colors and computing a weighted average of the intensities of the pixel and its nearest neighboring pixels as a new intensity of the pixel (col. 6: 32-55. Kichury explicitly discloses calculating pixel intensities in between vertices.).

In reference to claim 8, Kichury and Teo disclose all of the claim limitations as applied to claim 7 above. In addition, Kichury discloses wherein the step of computing a weighted average of the intensities of the pixel and its neighboring pixels as a new intensity of the pixel is followed by the steps of computing the difference between the weighted average intensity and the original pixel intensity and using the pixel intensity difference to adjust the intensities of the rest pixels inside the polygonal texture (col. 6: 32-55. Kichury discloses calculating a gradient change from one vertex's color to another vertex's color, or computing and adjusting the difference of pixel intensities of the image polygon.).

Response to Arguments

6. The addition of claims 9-18 is noted.
7. Applicant's arguments, see page 8 of Applicant's Remarks, filed 05/18/06, with respect to the 35 USC 112 rejection of claim 1 have been fully considered and are persuasive. The previous 35 USC 112 rejection of claim 1 has been withdrawn.
8. Applicant's arguments, see pages 8-9 of Applicant's Remarks, filed 05/18/06, with respect to the rejection(s) of claim(s) 1-8 under 35 USC 103(a) in view of Kichury and Teo et al. have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Kichury and Teo.
9. Applicant's arguments filed 05/18/06 have been fully considered but they are not persuasive.

In reference to claims 1-8, Applicant argues that Kichury does not disclose the step of comparing the image with the texture mapping within the spatial coordinate system to extract overlapped polygons (see page 8, section [4-5] of Applicant's Remarks). In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., comparing the image with the texture mapping...to extract overlapped polygons) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Nonetheless, the Office interprets that since the images of Kichury are "bump-mapped" images or representative of the surface of the 3D model, the Office interprets that the 3D model polygons are therefore inherently "extracted" from the images (col. 1: 48-54; col. 4: 30-34; col. 7: 48-54; col. 7: 61 through col. 8: 14 and #408-414 of Figure 4, especially #411-414).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Antonio Caschera whose telephone number is (571) 272-7781. The examiner can normally be reached Monday-Thursday and alternate Fridays between 7:00 AM and 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kee Tung, can be reached at (571) 272-7794.

Any response to this action should be mailed to:

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Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

571-273-8300 (Central Fax)

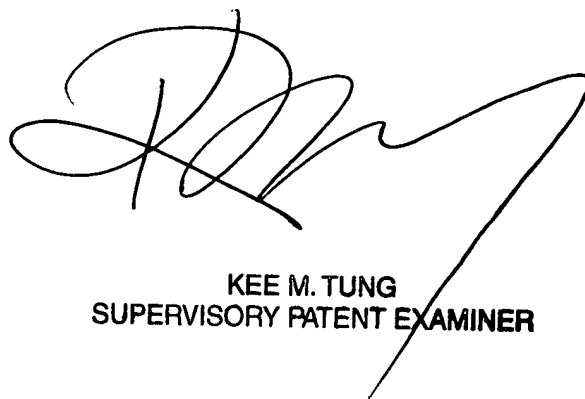
Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (571) 272-2600.

aac



PATENT EXAMINER

7/28/06



KEE M. TUNG
SUPERVISORY PATENT EXAMINER